• Debate on biofuels needs to distinguish between
  – First and second generation biofuels
  – Different feedstocks for first generation biofuels
  – Market-driven developments and support policies
  – Policy objectives pursued

• Focus on support policies in OECD countries
Policy Issues

• How far does biofuel production and consumption in OECD countries depend on policy support (subsidies, mandates, trade barriers)

• How effective are biofuel support policies in saving GHG emissions?

• How are agricultural prices affected?
A major challenge: Production costs

<table>
<thead>
<tr>
<th>Year</th>
<th>Fuel Type</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>Ethanol</td>
<td>Brazil</td>
</tr>
<tr>
<td>2005</td>
<td>Ethanol</td>
<td>USA</td>
</tr>
<tr>
<td>2006</td>
<td>Biodiesel</td>
<td>EU</td>
</tr>
<tr>
<td>2007</td>
<td>Ethanol</td>
<td>EU</td>
</tr>
<tr>
<td>2008</td>
<td>Ethanol</td>
<td>EU</td>
</tr>
</tbody>
</table>

- **Energy costs**
- **Processing costs**
- **Feedstock costs**
- **Co-product value**
- **Net price gasoline**
- **Net costs, total**
Impact of biofuel support removal on ethanol production, 2013-2017 average

- No tariffs
- No mandates
- No Budget support
- Total effect

Change compared to baseline

- USA
- Brazil
- Canada
- EU
- China
- India
- Other
- World

OECD Trade & Agriculture Directorate
Impact of biofuel support removal on biodiesel production, 2013-2017 average

OECD Trade & Agriculture Directorate
## How Effective Are Biofuels in Saving GHG?

<table>
<thead>
<tr>
<th>Biofuel Type</th>
<th>GHG savings (CO2 equivalent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From %</td>
</tr>
<tr>
<td>Ethanol from wheat</td>
<td>30</td>
</tr>
<tr>
<td>Ethanol from maize</td>
<td>20</td>
</tr>
<tr>
<td>Ethanol from sugar cane</td>
<td>70</td>
</tr>
<tr>
<td>Ethanol from sugar beet</td>
<td>30</td>
</tr>
<tr>
<td>Biodiesel from vegetable oil</td>
<td>40</td>
</tr>
</tbody>
</table>
How Effective are Biofuels Support Policies?

- Support policies in Canada, US and EU save 0.5% to 0.8% of GHG emissions from transport in 2015

- Support policies are estimated to cost USD 25 billion per year in 2015

- Policy support to biofuels costs USD 960 to USD 1700 per tonne of GHG (CO2 equivalent) saved
## Biofuels use high share of agricultural output

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coarse grains (mainly US)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share in US output</td>
<td>23.2%</td>
<td>36.3%</td>
<td>37.7%</td>
</tr>
<tr>
<td>Share in world output</td>
<td>8.4%</td>
<td>12.4%</td>
<td>13.4%</td>
</tr>
<tr>
<td><strong>Vegetable oils (mainly EU)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share in EU output</td>
<td>47.2%</td>
<td>86.8%</td>
<td>129.3%</td>
</tr>
<tr>
<td>Share in world output</td>
<td>8.7%</td>
<td>14.0%</td>
<td>19.6%</td>
</tr>
</tbody>
</table>
Impact of biofuel support removal on world commodity prices, 2013-2017 average

Change compared to baseline

-20\%  -15\%  -10\%  -5\%  0\%  5\%  10\%  15\%  20\%

Wheat  Cgrains  Oilseeds  VegOils  OilMeals  Sugar  Ethanol  Biodiesel

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Impact of existing and new biofuel policy programmes on world crop prices, 2013-2017 average

1 - Current Policies
2 - New Initiatives - 1st Gen.
3 - New Initiatives - 2nd Gen.
Total Effect

Change compared to baseline

OECD Trade & Agriculture Directorate
Policy Conclusions

- Biofuels support policies in OECD countries are costly
- The impact of biofuels policies on GHG emissions is limited
- Biofuels support policies have significant impacts on global commodity prices
- New policy initiatives add to existing problems
The Way Forward

- Alternative policy approaches may offer greater benefits
  - Reduced energy demand, GHG emissions
  - Freer trade in biofuels
  - Accelerated introduction of second generation biofuels that do not rely upon current commodity feedstocks